



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/592,349	06/12/2000	William C. Peatman	SC11100ZP	5118

23330 7590 01/21/2003

MOTOROLA, INC.  
CORPORATE LAW DEPARTMENT - #56-238  
3102 NORTH 56TH STREET  
PHOENIX, AZ 85018

EXAMINER

WILLE, DOUGLAS A

ART UNIT	PAPER NUMBER
2814	

DATE MAILED: 01/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/592,349

Applicant(s)

PEATMAN ET AL.

Examiner

Douglas A Wille

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM  
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

1) Responsive to communication(s) filed on 02 December 2002.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

4) Claim(s) 1-21 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1-21 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) All b) Some \* c) None of:  
1. Certified copies of the priority documents have been received.  
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

1)  Notice of References Cited (PTO-892) 4)  Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.  
2)  Notice of Draftsperson's Patent Drawing Review (PTO-948) 5)  Notice of Informal Patent Application (PTO-152)  
3)  Information Disclosure Statement(s) (PTO-1449) Paper No(s) 9,13. 6)  Other: \_\_\_\_\_

**DETAILED ACTION**

***Finality***

1. Finality of the prior Office Action is withdrawn and prosecution is reopened.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 4 – 16, 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abrokwah et al. ('929) in view of Kimura and Abokwah et al. ('739).

3. With respect to claims 1, 4 - 13, 15, 16 and 20, Abrokwah et al. ('929) show a HFET (see cover Figure and column 2, line 41 et seq.) with a substrate 10 of GaAs with AlGaAs intermediate layers, with layer 16 of GaAs, delta doped layer 22, InGaAs channel layer 23, AlGaAs layer 24 and cap layer 25 of GaAs. There is a gate contact 30 with sidewalls 35 and the layer 25 is partly removed. Abrokwah et al. ('929) do not show the layer 22 is GaAs but it would have been obvious to form it with GaAs to show the required bandgap discontinuity with the channel layer and since it would be compatible with the GaAs layer beneath it. Note that since layer 22 is delta doped it will have some undoped material on either face. Note also that implantation is performed before the layer 25 is removed. Kimura shows a FET where the gate has a layer of i-GaAs which is the same width as the gate and provides high speed operation. It would have been obvious to apply the Kimura technique to the Abrokwah et al. ('929) device for

the advantage shown (see abstract). Abrokwah et al. ('929) do not show the thickness of the GaAs layer but Abrokwah et al. ('739) show the thickness of layer 25 but Abrokwah et al. ('739) show a similar device in which the layer is < approximately 5 nm (column 2, line 21). It would have been obvious to use this thickness since it is known to be functional and since criticality has not been established and since Abrokwah et al. ('739) use the modifier "approximately", it is regarded as equivalent.

4. With respect to claims 14 and 21, it would have been obvious to anneal the structure to remove any damage due to the etching process.

5. Claims 2, 3 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abrokwah et al. ('929) in view of Kimura and further in view of Abokwah et al. ('739).

6. With respect to claim 2, Abrokwah et al. ('929) do not show the thickness of layer 25 but Abrokwah et al. ('739) show a similar device in which the layer is < approximately 5 nm (column 2, line 21). With respect to claims 3 and 19, it would have been obvious to use this thickness since it is known to be functional and since criticality has not been established and since Abrokwah et al. ('739) use the modifier "approximately", it is regarded as equivalent.

7. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abrokwah et al. ('929) in view of Kimura, Abokwah et al. ('739), and Abrokwah et al. ('285).

8. Abrokwah et al. ('285) show a similar device (see cover Figure) with a double layer sidewall. It would have been obvious to use the double layer sidewall shown by Abrokwah et al. ('285) as an implant mask (column 4, line 63) in the Abrokwah et al. ('929) and Kimura device as a design choice. With respect to claim 17, Abrokwah et al. ('285) show implanting after removal and it would have been a design choice to remove the layer either before or after

implanting with appropriate adjustment of the implant parameters. Note that if the spacer is not needed as a mask for implantation it could be applied at any time including both before and after implantation.

***Response to Arguments***

9. Applicant's arguments filed 3/27/02 have been fully considered but they are not persuasive. Applicant argues the amended claims which are addressed above and are not considered further here.

***Affidavit***

Applicant's Affidavit dated 23 August 2002 has been reviewed and it is noted that it contains only conclusory statements and is unsupported by facts and therefore does not influence the rejection.

***Conclusion***

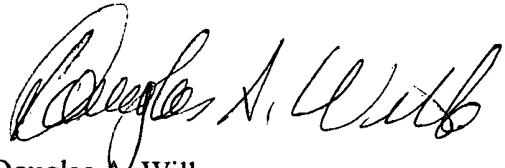
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas A Wille whose telephone number is (703) 308-4949. The examiner can normally be reached on M-F (6:15-3:45).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmi can be reached on (703) 308-4918. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Application/Control Number: 09/592,349  
Art Unit: 2814

Page 5



Douglas A. Wille  
Patent Examiner

January 16, 2003